REMARKS

Amendments

Amendments to the Claims

Applicants have amended claims 3, 7 and 15-19 to more particularly point out what Applicants regard as the invention. These amendments introduce no new matter.

Objections

Objections to the Claims

The Examiner objected to claims 3 and 19 as containing informalities. Applicants have corrected the informalities and respectfully request the withdrawal of the objection. Applicants respectfully submit that no new issues are raised by the corrections.

Rejections

Rejections under 35 U.S.C. § 101

Claims 15-18 were rejected under 35 U.S.C. § 101 as being directed at non-statutory subject matter. Applicants have amended claims 15-18 as suggested by the Examiner and respectfully request reconsideration and withdrawal of the rejection.

Rejections under 35 U.S.C. § 102(e)

Claims 6-21

Claims 6-21 were rejected under 35 U.S.C. § 102(e) as being anticipated by Strombergson *et al* (*Strombergson*), U.S. Patent No. 6,807,621 and having a publication date of March 28, 2002. Applicants do not admit that *Strombergson* is prior art and

reserve the right to swear behind the reference at a later date. Nonetheless, Applicants respectfully submit that claims 6-21 are not anticipated by *Strombergson*.

To anticipate a claim, a single reference must disclose each element of that claim. Claim 6 includes the elements "tracking program order of the first set of instructions relative to the second set of instructions in a global reorder buffer." Applicants believe that *Strombergson* does not teach these elements of claim 6. The Examiner asserts that because "the standard reorder buffer maintains a queue entry for each pending instruction on the processor," that "[the buffer] keeps track of all instructions which have not yet been committed." Nevertheless, this interpretation of *Strombergson* fails to teach "tracking program order of the first set of instructions **relative** to the second set of instructions in a global reorder buffer" (emphasis added). The recited claim language is patentably distinct from maintaining a queue entry for each pending instruction that has not been committed because, in *Strombergson*, the reorder buffer maintains the relationship between each pending instruction irrespective of which pipeline the instruction comes through. Thus, the queue entries of the reorder buffer have no knowledge of which pipeline, or which position within the pipeline, their respective instructions are in at any given moment.

Consider figures 1-4, where there are no lines of communication between the commit stage 5 and instruction fetch stage 1, decoding stage 2 or any of the reservation units. Furthermore, execution units 4a-4c have only one-way communications with commit stage 5 and only the instructions themselves are sent down these paths. Additionally, in col. 9, ll. 5-16, *Strombergson* explains that the only way to set the commit stage to flush mode is by marking the instruction itself. See also col. 10, ll. 27-34; col. 12, ll. 23-50; col. 13, ll. 24-27. Without more communication, there is no way for the reorder buffer to track relative segment order between execution units. This further emphasizes that the only way for the rest of the system to communicate with the commit stage is to mark the instructions themselves before the commit stage receives them. Thus, in *Strombergson* the commit stage has no way to "track" the instructions while they are in

the reservation or execution units because the commit stage only knows where the instructions are once it receives the instructions after they have gone through the execution units. The commit stage cannot know which execution unit the instructions are in when they are in the execution units.

This demonstrates that the reorder buffer of *Strombergson* maintains the absolute program order instead of the relative order. In other words, the reorder buffer is only able to reorder the instructions because the instructions themselves are kept in absolute program order. Under this scheme, the commit stage does not know if a particular instruction that it is waiting for is in execution unit 4a or 4b or 4c. Thus, it does not "[track] program order of the first set of instructions relative to the second set of instructions in a global reorder buffer" Because *Strombergson* fails to teach each and every limitation of claim 6, Applicants respectfully request reconsideration and withdrawal of the rejection.

Claims 7-11 depend from independent claim 6, and are patentable for at least the reasons discussed in support of that base claim. Accordingly, reconsideration and withdrawal of the anticipation rejection of these claims are requested.

Independent claims 12, 15 and 19 include elements similar to those of independent claim 1 including "a global reorder buffer to track instruction order of instructions assigned to the first reorder buffer relative to the second reorder buffer," "tracking program order of the first set of instructions relative to the second set of instructions in a global tracking device" and "a means for tracking program order of the first set of instructions relative to the second set of instructions in a global tracking device." Thus, at least for the reasons mentioned above in regard to independent claim 1, *Strombergson* does not anticipate each of these claims. Accordingly, reconsideration and withdrawal of the anticipation rejection of these claims are requested.

Claims 13, 14, 16-18, 20 and 21 depend from independent claims 12, 15 and 19, respectively, and are patentable for at least the reasons discussed above in support of

claims 12, 15 and 19. Accordingly, reconsideration and withdrawal of the anticipation rejection of claims 13, 14, 16-18, 20 and 21 are requested.

Claims 1-5

Claims 1-5 were also rejected under 35 U.S.C. § 102(e) as being anticipated by *Strombergson*. Claim 1 recites in part, "a third device coupled to the first device and second device to track relative segment order between the first device and the second device."

In response to the argument in par. 37 of the Office Action that the reorder buffer in *Strombergson* maintains the order of the queue entries and thus tracks the instructions, Applicants assert that "[tracking] relative segment order" is patentably distinct from maintaining order of the queue entries. The reorder buffer of *Strombergson* only maintains the absolute order of its own queue entries. See fig. 10, items 1-11 and col. 14, l. 58-col. 15, l. 12. As discussed above, the only communication between the reorder buffer and the rest of the system is through markings on the instructions themselves as they arrive at the buffer. This means that the reorder buffer does not maintain order of the instructions while they are in the execution units. See also col. 10, ll. 27-34; col. 12, ll. 23-50; col. 13, ll. 24-27. Therefore, the reorder buffer of *Strombergson* does not track the order of the instructions in any of the execution units relative to instructions in another execution unit and *Strombergson* fails to teach each and every element of the claim.

Additionally, claim 1 contains elements similar to those in claim 6, and at least for the reasons mentioned in regard to claim 6, Applicants believe claim 1 is patentable over the references of record, and respectfully request reconsideration and withdrawal of this rejection.

Claims 2-5 depend from claim 1, and are patentable for at least the reasons discussed in support of the base claim. Applicants respectfully request reconsideration and withdrawal of this rejection as well.

SUMMARY

Claims 1-21 are currently pending. In view of the foregoing amendments and remarks, Applicants respectfully submit that the pending claims are in condition for allowance. Applicants respectfully request reconsideration of the application and allowance of the pending claims. If the Examiner determines the prompt allowance of these claims could be facilitated by a telephone conference, the Examiner is invited to contact the undersigned at (310) 207 3800. Authorization is hereby given to charge our Deposit Account No. 02-2666 for any charges that may be due. Furthermore, if an extension is required, then Applicants hereby request such extension.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

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Thomas M. Coester
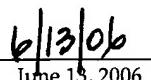Attorney for Applicant
Registration No. 39,637

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, California 90025
Telephone (310) 207-3800
Facsimile (310) 820-5988

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Susan M. Barrette   June 13, 2006